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| 10/690,979 | 10/22/2003 | Stephen Arnold | Poly-46 | 4703 |

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| EXAMINER | |
|---|---|
| LUM, LEON YUN BON | |
| **ART UNIT** | **PAPER NUMBER** |
| 1641 | |

DATE MAILED: 05/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/690,979 | ARNOLD ET AL. | |
| | Examiner | Art Unit | |
| | Leon Y. Lum | 1641 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *28 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) *27-36* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 October 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11 April 2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.



RD

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election with traverse of Group I, claims 1-9 in the reply filed on 28 February 2005 is acknowledged. The traversal is on the ground(s) that Groups I and II are not patentably distinct and there is no search burden between each of Groups I-III.

With respect to Groups I and II, Applicant's argument on the groups of search burden is found convincing and the groups have been rejoined. However, with respect to Groups I-II and III, Applicants' argument is not found persuasive because Group III requires searching for specific binding agents and the process of making specific areas on the microspheres non-reactive, which are not required searches for Groups I-II, and Groups I-II require searching for microsphere properties and light sources, which are not required searches for Group III.

### *Drawings*

2. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because Figures 1, 8, and 10-11 include hand-drawn reference numbers and Figures 1, 8, and 10 are so dark that it is difficult to identify components within the drawings. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer

prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

***Specification***

3. The disclosure is objected to because of the following informalities: The specification does not provide a description of what the reference numbers in Figure 10 are directed towards and one of ordinary skill in the art at the time of the invention would not know what the embodiments in Figure 10 represent.

Appropriate correction is required.

***Claim Objections***

4. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 20-35 been renumbered 21-36.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 2, 11, and 16-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. In claims 2 and 11, line 3, the phrase "substantially the square root of $R\lambda/2\pi n$" is vague and indefinite. Since the term "substantially" is not defined by the specification, it is unclear if the arclength width (line 2) will have a relationship other than what is indicated by the ratio $R\lambda/2\pi n$.

8. In claims 16-17, the phrase "wherein light source" is vague and indefinite. It is unclear whether the claimed light source is the same or a different light source than the light source in claim 10.

## *Claim Rejections - 35 USC § 102*

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

10. Claims 1 and 10 are rejected under 35 U.S.C. 102(a) as being anticipated by Airola et al (Proceedings of SPIE, 2002).

In the instant claims, Airola et al teach a spherical microcavity fluorescence biosensor with a biological capture layer on the outer surface of the sphere, wherein immobilized analyte/fluorophore is excited (i.e. applying a light source) through the evanescent wave of a cavity mode (i.e. optical carrier), and enhances sensitivity of fluorescence detection through whispering-gallery mode resonances (i.e. detecting light and determining presence of substance based on shift in resonance of the microsphere). See page 29, last paragraph; page 30, entire page; and Figure 1 and caption.

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 1-2, 4-5, 10-11, 13-14, 19-22, and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maleki et al (US 2002/0097401 A1) in view of Boyd et al (US 2004/0023396 A1).

In the instant claims, Maleki et al teach a spherical micro whispering-gallery-mode resonator (i.e. microsphere) coupled to an evanescent coupler (i.e. at least one optical carrier), wherein the resonator has a surface coating that binds to a specific analyte (i.e. receptors), wherein the coupler sends an input beam from a light source to the resonator and carries energy out of the resonator (i.e. applying a light source and detecting light), and wherein changes in mode structure, including the width of the resonance, can be applied to measure analyte binding (i.e. determining a presence of

the substance). See page 1, section 0005; page 3, section 0031 ; page 4, sections 0041-0042 ; and page 5, sections 0045-0047. In addition, Maleki et al teach that spherical resonators can support whispering gallery modes, which are electromagnetic field modes confined in an interior region and close to the surface of the sphere around its equator. See page 1, section 0016.

However, Maleki et al fail to teach that the receptors are provided substantially at a belt surface area including an equator of the microsphere, and wherein surface areas of the microsphere other than the belt surface area are substantially free of receptors.

Boyd et al teach one or more probes coupled to a limited region on the surface of a resonator, in order to provide probes in areas where light is confined. See page 3, section 0028. In addition, Boyd et al teach that the resonator is a whispering-gallery-mode resonator. See page 2, section 0018.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method and apparatus of Maleki et al with one or more probes coupled to a limited region on the surface of a resonator, as taught by Boyd et al, in order to provide probes in areas where light is confined. Since Maleki et al teach that light in a microsphere with whispering gallery modalities are confined to an equatorial region, the probes taught by Boyd et al would be confined to the surface of the microspheres along the equatorial region. One of ordinary skill in the art at the time of the invention would have had reasonable expectation of success in including probes limited to a specific region, as taught by Boyd et al, in the method and apparatus of Maleki et al, since Maleki et al teach capture agents on the surface of a resonator with

whispering gallery mode properties, and the probes of Boyd et al area also immobilized on the surface of a resonator with whispering gallery mode properties.

With regards to claim 2, Maleki et al and Boyd et al references do not explicitly teach an arclength width that is substantially the square root of $R\lambda/2\pi n$. However, the references do teach a microsphere with a band region coupled to an optical fiber, which have a radius R, refractive index n, and wavelength $\lambda$. Since the claimed arclength width is dependent upon the limitations of R, n, $\lambda$, and a microsphere/optical carrier system, and the microsphere and optical fiber of Maleki et al and Boyd et al teaches the limitations, it would have been obvious to one of ordinary skill in the art at the time of the invention to obtain an arclength width of the square root of $R\lambda/2\pi n$ from the known variables R, n, and $\lambda$ of a coupled microsphere-fiber optic system.

With regards to claims 4, 13, and 24, Maleki et al teach that microsphere diameters can include 10 microns. See page 1, section 0016.

With regards to claims 20-22, Boyd et al teach that probes include polypeptides and oligonucleotides, and target molecules can include proteins, a viral capsid component, and nucleic acids. See page 3, section 0030 and page 4, section 0034.

15. Claims 3, 6, 12, 15, 23, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maleki et al (US 2002/0097401 A1) in view of Boyd et al (US 2004/0023396 A1) as applied to claims 1, 10, and 19 above, and further in view of Ganapolskii et al (Measurement Science and Technology, 1997) and Aslam et al (US 4,912,087), and in light of Alexandrov et al (US 3,984,524).

Maleki et al and Boyd et al references have been disclosed above, but fail to teach that the microsphere is formed of amorphous sapphire and that the index of refraction in water is approximately 1.7.

Ganapolskii et al teach a dielectric sphere resonator made from sapphire crystal, in order to provide a measuring resonator with low dielectric losses in the millimeter-wave range. See Abstract.

Aslam et al teach amorphous silicon, in order to provide a highly resistive material. See column 10, lines 34-35.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Maleki et al and Boyd et al with a dielectric sphere resonator made from sapphire crystal, as taught by Ganapolskii et al, in order to provide a measuring resonator with low dielectric losses in the millimeter-wave range, and with amorphous silicon, as taught by Aslam et al, in order to provide a highly resistive material. One of ordinary skill in the art at the time of the invention would have had reasonable expectation of success in including a sapphire resonator, wherein the sapphire is amorphous, as taught by Ganapolskii et al and Aslam et al, in the method of Maleki et al and Boyd et al, since Maleki et al and Boyd et al teach microsphere resonators, and the amorphous sapphire sphere of Ganapolskii et al and Aslam et al is one type of material that can act as a resonator.

In addition, although Ganapolskii et al and Aslam et al references do not teach that the index of refraction in water is approximately 1.7, the sapphire sphere taught by

the references inherently has an index of refraction of 1.7 (see Alexandrov et al, column 2, lines 16-17).

16. Claims 7-8 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maleki et al (US 2002/0097401 A1) in view of Boyd et al (US 2004/0023396 A1) as applied to claims 1 and 10 above, and further in view of Boyd et al (Applied Optics, 2001).

Maleki et al and Boyd et al ('396) references have been disclosed above, but fail to teach that the light source is controlled to emit light in the blue spectrum and at about 400 nm.

Boyd et al (Applied Optics) teach an optical source in the visible range of 400-700 nm, in order to obtain the greatest sensitivity in analysis of biological materials. See page 5743, left column, 2nd paragraph.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Maleki et al and Boyd et al ('396) with an optical source in the visible range of 400-700 nm, as taught by Boyd et al (Applied Optics) in order to obtain the greatest sensitivity in analysis of biological materials. One of ordinary skill in the art at the time of the invention would have had reasonable expectation of including an optical source of 400-700 nm, as taught by Boyd et al (Applied Optics), in the method of Maleki et al and Boyd et al ('396), since Maleki et al and Boyd et al ('396) teach an optical source coupled to a resonator that can detect

biological materials, and the optical source of Boyd et al (Applied Optics) is applied for the analysis of biological materials.

17. Claims 9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maleki et al (US 2002/0097401 A1) in view of Boyd et al (US 2004/0023396 A1) as applied to claims 1 and 10 above, and further in view of Thiele et al (US 5,602,102).

Maleki et al and Boyd et al references have been disclosed above, but fail to teach that a molecule having a mass of about 200,000 Da is captured.

Thiele et al teach dipeptidyl peptidase-I, which has a molecular weight of 200,000 Da, in order to identify an enzyme that is present in high levels of cytotoxic lymphocytes and myeloid cells. See column 1, lines 20-64.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Maleki et al and Boyd et al with dipeptidyl peptidase-I, which has a molecular weight of 200,000 Da, as taught by Thiele et al, in order to identify an enzyme that is present in high levels of cytotoxic lymphocytes and myeloid cells. One of ordinary skill in the art at the time of the invention would have had reasonable expectation of success in including dipeptidyl peptidase-I, as taught by Thiele et al, in the method of Maleki et al and Boyd et al, since Maleki et al and Boyd et al teach the detection of biological molecules, and the dipeptidyl peptidase-I of Thiele et al is one type of biological molecule.

***Double Patenting***

18. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

19. Claims 1-26 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-7 of copending Application No. 10/096,333 in view of Boyd et al (US 2004/0023396 A1).

Claims 1-7 of the copending application teach most of the limitations of claims 1-26 of the instant application by disclosing a method for determining the presence or concentration of a substance in a medium, the method comprising providing a sensor in the medium, wherein the sensor includes at least one optical carrier and a microsphere having a surface including receptors for the substrate, each of the at least one optical carrier being coupled with the microsphere, applying a light source to one of the at least one optical carriers of the sensor, detecting light from one of the at least one optical carriers of the sensor, and determining a presence or concentration of the substance

based on a property of the detected light, wherein the property is based on a shift in resonance of the microsphere.

However, claims 1-7 of the copending application fail to teach that the receptors are provided substantially at a belt surface area including an equator of the microsphere, and wherein surface areas of the microsphere other than the belt surface area are substantially free of receptors.

Boyd et al teach one or more probes coupled to a limited region on the surface of a resonator, in order to provide probes in areas where light is confined. See page 3, section 0028. In addition, Boyd et al teach that the resonator is a whispering-gallery-mode resonator. See page 2, section 0018.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of claims 1-7 of the copending application with one or more probes coupled to a limited region on the surface of a resonator, as taught by Boyd et al, in order to provide probes in areas where light is confined. One of ordinary skill in the art at the time of the invention would have had reasonable expectation of success in including probes coupled to a limited region on the surface of a resonator, as taught by Boyd et al, in the method of the copending application, since the copending application teach the detection of substances through optical resonance, and the whispering-gallery-mode resonator taught by Boyd et al is one type of material that provides detection of analytes through optical resonance.

This is a provisional obviousness-type double patenting rejection.

20. Claims 1-26 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3 of copending Application No. 10/735,247 in view of Boyd et al (US 2004/0023396 A1).

Claims 1-3 of the copending application teach most of the limitations of claims 1-26 of the instant application by disclosing a method for determining the presence or concentration of a substance in a medium, the method comprising providing a sensor in the medium, wherein the sensor includes at least one optical carrier and a microsphere having a surface including receptors for the substrate, each of the at least one optical carrier being coupled with the microsphere, applying a light source to one of the at least one optical carriers of the sensor, detecting a transmission spectra (i.e. light) from one of the at least one optical carriers of the sensor, and determining a presence or concentration of the substance based on a property of the detected light, wherein the property is based on a shift in resonance of the microsphere.

However, claims 1-3 of the copending application fail to teach that the receptors are provided substantially at a belt surface area including an equator of the microsphere, and wherein surface areas of the microsphere other than the belt surface area are substantially free of receptors.

Boyd et al teach one or more probes coupled to a limited region on the surface of a resonator, in order to provide probes in areas where light is confined. See page 3, section 0028. In addition, Boyd et al teach that the resonator is a whispering-gallery-mode resonator. See page 2, section 0018.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of claims 1-3 of the copending application with one or more probes coupled to a limited region on the surface of a resonator, as taught by Boyd et al, in order to provide probes in areas where light is confined. One of ordinary skill in the art at the time of the invention would have had reasonable expectation of success in including probes coupled to a limited region on the surface of a resonator, as taught by Boyd et al, in the method of the copending application, since the copending application teach the detection of substances through an optical change, and the whispering-gallery-mode resonator taught by Boyd et al is one type of material that provides detection of analytes through changes in optical resonance, which is one type of optical change.

This is a provisional obviousness-type double patenting rejection.

21. Claims 1-26 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 34-39 of copending Application No. 10/768,977 in view of Boyd et al (US 2004/0023396 A1).

Claims 1-3 of the copending application teach most of the limitations of claims 1-26 of the instant application by disclosing a method measuring one or more of at least two target substances (i.e. determining the presence of a substance in a medium) using a system including a sensor including at least one optical carrier optically coupled with both the light source and at least two optical cavities (i.e. each of the at least one optical carrier being coupled with the microsphere), applying a light source to the optical

carrier, detecting the resonance excited in the optical cavities a first and second time to determine a change in the characteristic of the resonance of any of the optical cavities (i.e. detecting light from one of the at least one optical carriers of the sensor), and determining a measurement of the target substance using a shift in characteristic of the resonance detected by the detector (i.e. determining a presence of the substance based on a property of detected light, wherein the property is based on a shift in resonance of the microsphere).

However, claims 1-7 of the copending application fail to teach that the receptors are provided substantially at a belt surface area including an equator of the microsphere, and wherein surface areas of the microsphere other than the belt surface area are substantially free of receptors.

Boyd et al teach one or more probes coupled to a limited region on the surface of a resonator, in order to provide probes in areas where light is confined. See page 3, section 0028. In addition, Boyd et al teach that the resonator is a whispering-gallery-mode resonator. See page 2, section 0018.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of claims 34-39 of the copending application with one or more probes coupled to a limited region on the surface of a resonator, as taught by Boyd et al, in order to provide probes in areas where light is confined. One of ordinary skill in the art at the time of the invention would have had reasonable expectation of success in including probes coupled to a limited region on the surface of a resonator, as taught by Boyd et al, in the method of the copending application, since the copending

application teach the detection of substances through optical resonance, and the whispering-gallery-mode resonator taught by Boyd et al is one type of material that provides detection of analytes through optical resonance.

This is a provisional obviousness-type double patenting rejection.

***Conclusion***

22. No claims are allowed.

23. The prior art made of record and not relied upon is considered pertinent to Applicants' disclosure:

Maleki et al (US 6,473,218 B1) teach light modulation in whispering-gallery-mode resonators in the shape of microspheres.

Tapalian et al (US 6,507,684 B2) teach an optical resonator system including an optical microcavity and a waveguide.

Blair et al (Applied Optics, 2001) teach resonant-enhanced evanescent-wave fluorescence biosensing using capture monolayers on the resonator.

Hill et al (Journal of the Optical Society of America B, 1999) teach fluorescence imaging of a single molecule in a microsphere.

Rosenberger et al (Proceedings of SPIE, 2000) teach evanescent-wave sensors using microspheres in whispering gallery modes.

24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon Y. Lum whose telephone number is (571) 272-2878. The examiner can normally be reached on weekdays from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571) 272-0823. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Leon Y Lum
Patent Examiner
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LYL

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05/13/05